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10/628,063	07/25/2003	Douglas K. Lawson	4726-012	4159
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COATS & BENNETT, PLLC			CADUGAN, ERICA E	
P O BOX 5			ART UNIT	
RALEIGH, NC 27602			PAPER NUMBER	
			3722	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/628,063	Applicant(s) LAWSON, DOUGLAS K.	
	Examiner Erica E Cadugan	Art Unit 3722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>10/28/04</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/25/03</u> . | 6) <input type="checkbox"/> Other: _____. |

Art Unit: 3722

DETAILED ACTION

Comment Regarding Examiner's Amendment Proposed on 10/21/04

1. As indicated in the attached interview summary, the examiner proposed an Examiner's Amendment to the Applicant on 10/21/04, the text of which is attached to the interview summary. However, as also indicated on the attached interview summary, Applicant indicated at that time that they would rather receive an action at this time. Upon further review of the art, regarding the changes to claim 1 proposed by the Examiner, the Examiner notes that such changes would not appear to be sufficient to overcome U.S. Pat. No. 4,332,066 to Hailey et al., and thus, the indication of allowability of the claim 1 that was proposed on 10/21/04 is hereby withdrawn. However, Examiner notes that the following changes to claim 1 would serve to overcome the art of record, including U.S. Pat. No. 4,332,066 to Hailey et al:

Claim 1 (Proposed Amendment). A deburring [tool] apparatus comprising:

a housing;

a pneumatic motor mounted in the housing and including a planar back wall and a spindle having [an outer] a front end configured to attach a deburring tool;

a spherical pivot bearing mounted adjacent the back wall of the pneumatic motor for allowing the motor to move relative to the housing;

a connector extending from the back wall of the pneumatic motor and connected to the pivot bearing for permitting the pneumatic motor to move with the pivot bearing; and

a compliance device extending around the pneumatic motor at a location between the back wall and the [outer] front end of the spindle for centering the pneumatic motor but wherein

Art Unit: 3722

the compliance device is yieldable in response to the deburring [tool] apparatus encountering a disturbing force.

Claim Objections

2. Claims 4 and 21 are objected to because of the following informalities: in claim 4, line 3, it appears that –a—should be inserted prior to “source”; in claim 21, line 2, it appears that “about” should be –at--. Appropriate correction is required.

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Note that as filed, the claims go from 7 to 8 to 8 to 10, i.e., there is no claim 9.

Accordingly, the second misnumbered claim 8 has been renumbered “9”.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-13 and 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In at least claim 1, there is no frame of reference provided for determining what is meant by “back” and “outer”. Similarly, in claim 15, there is no frame of reference provided in the claim for determining what is meant by “outwardly”.

Art Unit: 3722

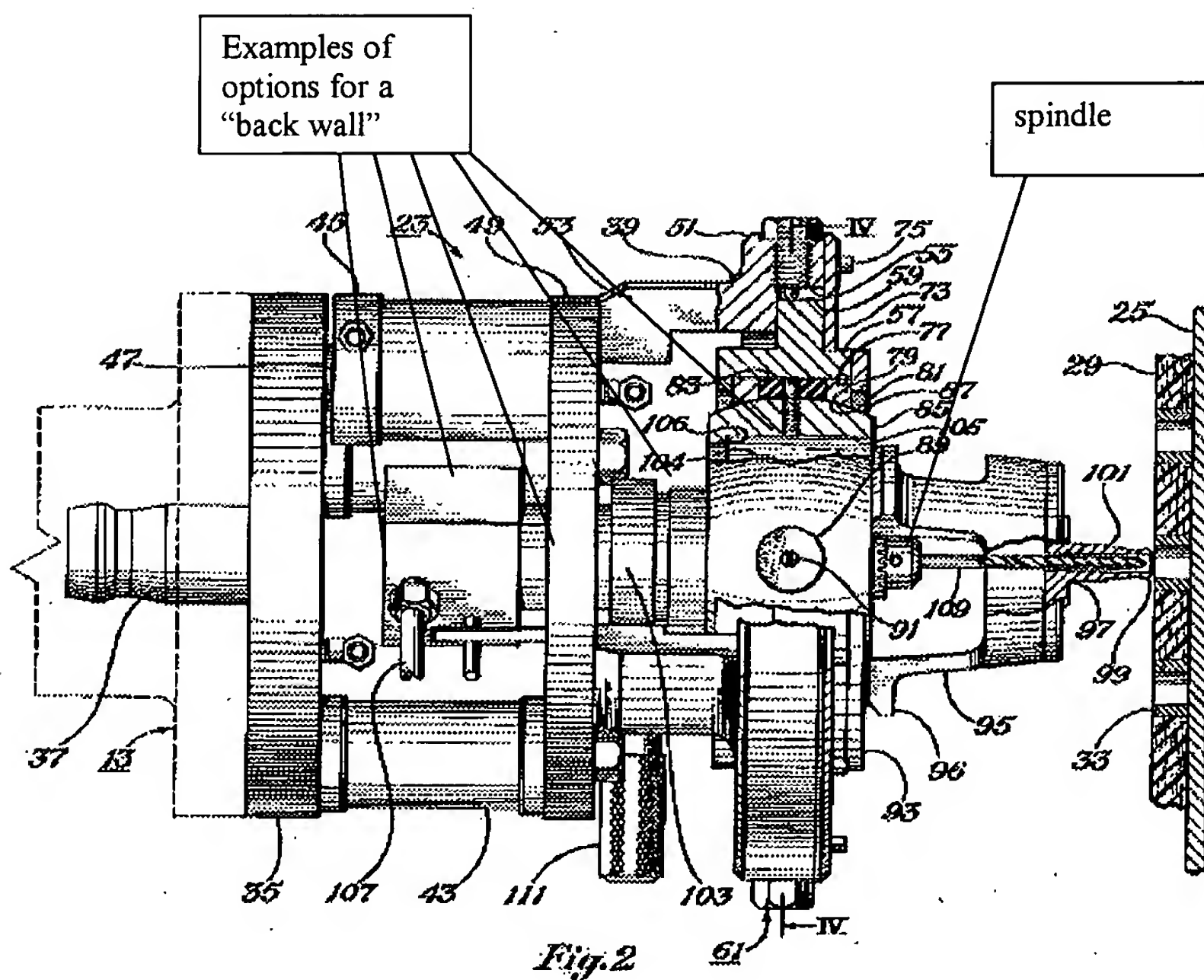
Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 14-15, 19, 25-27 those of which were rejected under 35 USC 112 above are as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 4,332,066 to Hailey et al.



Hailey teaches a robotic drilling device. It is noted that there is nothing preventing an end user from using a drill to “deburr” a hole, for example. Hailey’s device includes a drill 103 having a drill motor that is “driven by air supplied to a manifold through conduits 107” (col. 4, lines 26-27. Note that the motor is located within a “housing”, such as being located at least within the perimeter of members 51 and 53, see Figure 2.

Also, as illustrated in the above reproduction of Figure 2, there are several walls or surfaces of Hailey’s device that can be considered a “back wall”, forming a “back portion” of the device or motor as set forth in claim 14, for example, particularly since they are walls or portions that are located “away” from the vicinity of the “front” portion where the cutter is located.

At the right (as viewed in Figure 2) end of the drill 103 is mounted a cutter 109, and thus the right end of the drill (as shown above) can be considered a spindle, and the vicinity in which the cutter 109 is attached to the spindle is considered the “front” end of the device as claimed.

Note also that ring 79 has a concave spherical (see Figures 2 and 4, also col. 3, lines 33-66, and especially col. 3, lines 59-63, for example) surface 81, constituting a bearing surface, and thus ring 79 constitutes the claimed “pivot bearing”. Spherical member 85 has a convex surface that mates in sliding contact with the surface 81 (see Figures 2, 4, and col. 3, lines 33-66, for example). Note that member or “pivot bearing” 79 is located “adjacent” various ones of the aforescribed “back walls” and is thus considered “adjacent” to the “back portion” of the motor. Also note that member 85 extends “from” a circumferential wall that can be considered a “back wall” or a part of a “back portion” as described previously, and thus member 85 constitutes the claimed “connector”.

Art Unit: 3722

Specifically regarding claim 15, note that the circumferential wall directly beside connector 85 can be considered a “back wall” as described previously, and that a portion of the member 85 extends within the inner hollow portion of ring 79 (Figure 2). Alternatively note that circular resilient spherical disks 89 (received within cavities 83, see col. 3, lines 50-51) can be considered the claimed pivot bearing, and that 89 and the connector 85 are affixed to one another via screws 91 (see Figure 2, also col. 46-50, for example). The threaded screw is fixedly connected to connector 85 and can thus be considered a part thereof. Thus, the threaded screw constitutes a portion of the connector extending between a “back portion” of the motor and the “pivot bearing” (in this case 89 and/or 79), and “into and through an opening” in the pivot bearing (see Figure 2).

Regarding claim 25, also note that Hailey teaches a compliance device including a plurality of spring-biased pin assemblies 61 (Figures 2-5, col. 3, lines 11-32 and col. 5, lines 1-17 and 41-55), which compliance device “extends around” the motor at a location that can alternatively be considered a “front portion” thereof, as broadly claimed.

Re claim 26, note that member 79 is “spaced from” the motor, and is “movable”, i.e., when the robot moves the entire device (see Figure 1, for example).

Claim Rejections - 35 USC § 102/103

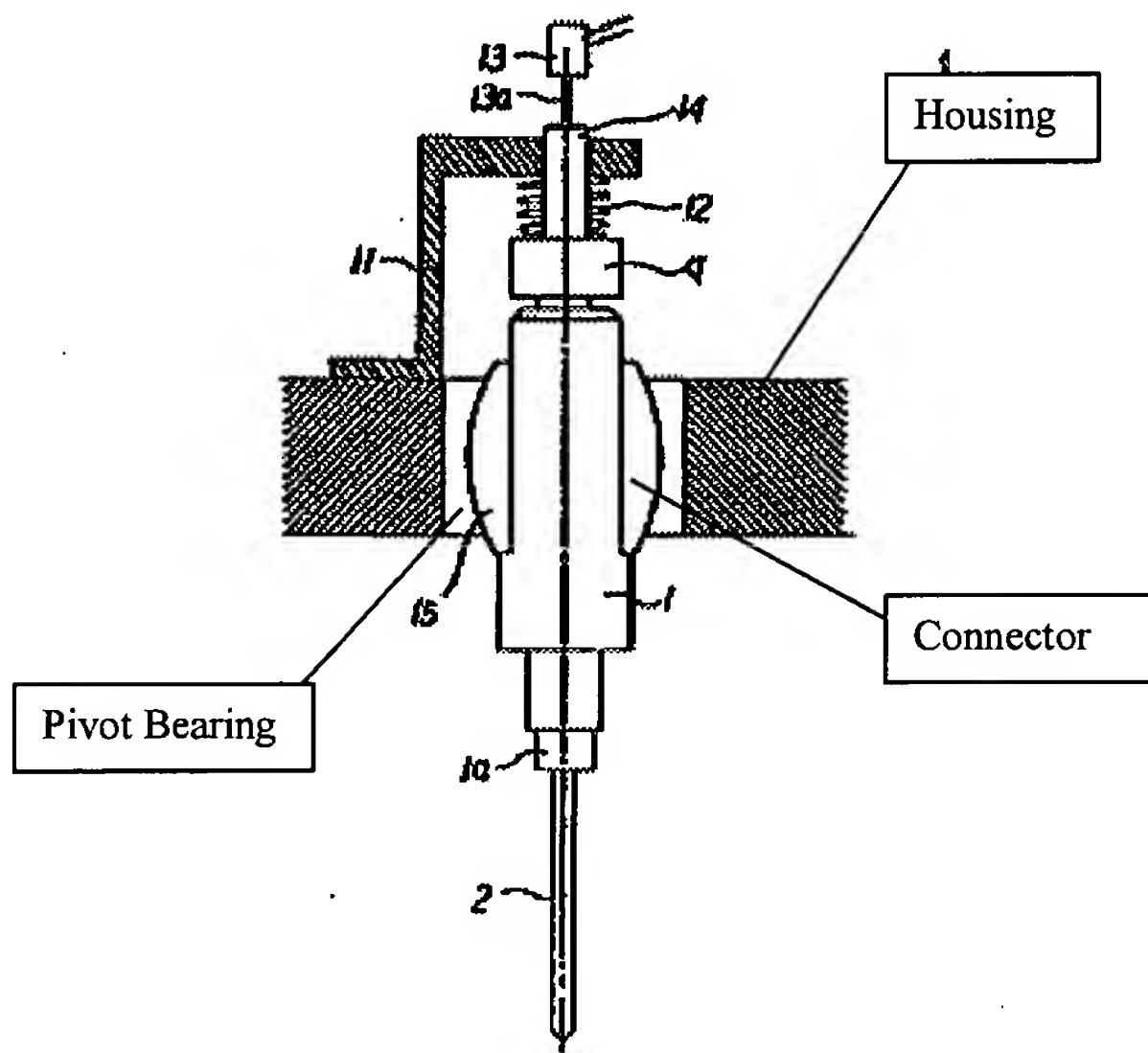
8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3722

9. Claims 14-15, 19, and 25-30, those of which were rejected under 35 USC 112 above are as best understood, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP-64-2811 ('811).

Note that '811 teaches a deburring device (see English abstract) having a motor 1 (Examiner orally consulted a Japanese translator who indicated that the first full paragraph in the upper left portion of the left column on page 70 teaches that element 1 is a motor whose driving source is either electric or fluid) mounted within a housing (as indicated in the reproduction of Figure 5 below).



Art Unit: 3722

Note that the “pivot bearing” (shown above) is located “adjacent” the “back portion” of the motor, as broadly claimed. Further note that ‘811 teaches the connector extending between the motor 1 and the pivot bearing as shown above.

Regarding claim 15, note, for example, that the outer circumferential wall of the motor where the pivot bearing and connector 15 are located can be considered the “back wall” as claimed, since, for example, that is a wall that is located at the “back” of the motor with respect to where the tool 2 is located. Also note that the “pivot bearing” has an opening in which the “connector” is located (see Figure 5).

Regarding claim 25, note that as broadly claimed, the compliance device 12 can be considered to be located “adjacent” a “front portion” of the motor 1, i.e., there is nothing preventing the top of the device from being considered the “front” portion as set forth in claim 25. Also note that, broadly speaking, the compliance device aids in “centering” the motor within the housing.

Re claim 26, note that the “pivot bearing” is spaced from the motor 1, and also note that the pivot bearing is considered “movable” in that it is able to be moved when the tool as a whole, including the housing is moved (see the English abstract and Figure 1, for example, noting that the abstract sets forth that the tool has a “moving speed” and a “path”).

Re claim 28, note that the circumferential wall of the motor 1 about which the pivot bearing and connector extend can be considered a “back wall” as claimed in claim 28, since, for example, it is a wall located “behind” the planar “front” or top (as viewed in Figure 5) wall thereof.

Art Unit: 3722

Regarding claim 29, note that it appears that member 14 is integrally connected to the motor 1, and can thus be considered part of a “front portion” of the motor as claimed.

Regarding the “pneumatic” motor, it is noted that, as described above, ‘811 explicitly teaches that the motor can be fluid-powered, which encompasses air-powered, i.e., pneumatic, motors.

In the alternative, ‘811 does not appear to explicitly teach that the fluid power source for the motor 1 is air, i.e., does not appear to explicitly teach that the motor is a pneumatic motor.

However, Examiner takes Official Notice that the use of air to power a motor is notoriously well-known and that pneumatic motors are widely known and used in the art, Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the well-known specific power source of air for the generic “fluid” power source of ‘811, and specifically to have substituted a well-known pneumatic motor for the generic “fluid motor” of ‘811, depending on the design constraints of the end user, such as what type of power supply was going to be available for use at the location where the tool was intended to be used, or such as availability of one type of motor over another at the time of design (i.e., depending on the availability or cost of a pneumatic motor instead of an electric or hydraulic motor at the time of design).

Claim Rejections - 35 USC § 103

10. Claims 1-3, 6-7, 11-15, and 19-30, those of which are rejected above under 35 USC 112 are as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-60-131106 (‘106).

'106 teaches a deburring tool including a cutter 6 (see Figure 2) that is rotated by a rotational prime mover or "motor" 1 that is mounted in a housing 3 (see Figure 2). Note that the left (as viewed in Figure 2) portion of the motor 1 is considered the spindle, and the portion in the vicinity of which the cutter 6 is attached is considered its "outer end" as claimed. Note also that the right (as viewed in Figure 2), larger-diameter portion, of the motor 1 has a circumferential wall as well as a planar wall, and that either of these two walls can be considered the claimed "back" wall of claim 1 as they are at the "back" side of the device, for example, the side away from the cutting tool.

Regarding claim 1, note that '106 teaches pivot bearings that are "adjacent" either of the aforescribed "back walls" of the motor (see Figure 2). Additionally, in order for the device to function as intended, i.e., for the motor to be able to pivot as shown in Figure 2, there must inherently be some sort of connection device, i.e., connector, extending from the described circumferential wall of the motor to the pivot bearing to permit the motor to pivot as shown in Figure 2.

Additionally, '106 teaches a "compliance device" 2 (see Figures 1-2) that extends around the motor 1 at a location between either of the aforescribed "back walls" and the aforescribed "outer end of the spindle" (see Figures 1-2). Note that the springs shown in Figures 1-2 would serve to center the motor, but would also yield as claimed in claim 1.

Regarding claim 3, note that the compliance device inherently includes an infinite number of "pressure ranges". For example, there are an infinite number of different pressures at which the user can apply the tool to the workpiece, leading to an infinite number of responding pressures in the compliance device. Also/alternatively note that '106 teaches a further

Art Unit: 3722

embodiment shown in Figures 4-5 wherein the compliance device includes pressure cylinders 28 and 31. Further note that '106 teaches that pressure control valve 13 is used to change the pressure being applied to these pressure cylinders (see English abstract, also Figures 4-5).

Regarding claim 6, see Figures 2 and 4.

Regarding claim 7, note that the compliance devices 2 and 28, 30 extend around a front “elongated” portion of the motor (see Figures 2 and 4).

Specifically regarding claim 15, it appears that the “connector” is a pivot pin that extends “outwardly” (with respect to the rotational axis of the spindle) from either of the aforescribed “back walls” and “into” the pivot bearing (see Figures 2 and 4, for example).

Regarding claim 20, note that the aforescribed pivot bearings constitute a “mounting structure” that permits the motor to move with respect to the housing 3 (see Figures 2 and 4).

Regarding claim 21, as best understood, the pivot bearings are disposed “about” the rear portion of the housing insofar as the pivot bearings of the present invention are disposed “about” the rear portion of the housing.

Regarding claim 24, note that it appears that the center of mass of the motor is within the back (right as viewed in Figure 2) portion, and is spaced from the compliance device 2 (see Figures 2, 4).

Regarding claim 26, note that the aforescribed connector ultimately connects to housing 3, which is spaced from the motor 1, and which is movable, e.g. to perform machining with tool 6.

Regarding claim 27, note that the pivot pin connector described previously bears within a member shown in Figures 2 and 4, which member is thus considered a “pivot bearing”, and which member is “movable” with the housing 3, for example, to perform a cutting operation.

While ‘106 does teach the motor as described previously, ‘106 is apparently silent as to whether the motor is a “pneumatic motor”, or indeed, what type of power source is used to operate the motor.

However, Examiner takes Official Notice that the use of air to power a motor is notoriously well-known and that pneumatic motors are widely known and used in the art, and particularly regarding claim 12, that pneumatic motors wherein the air inlet connects to a side of the motor [and thus would (need to) be fed through a side wall of the housing as viewed in Figures 2 and 4]. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the well-known specific power source of air for the generic power source of ‘106, and specifically to have substituted a well-known pneumatic motor (of the type having a side inlet) for the generic “motor” of ‘106, depending on the design constraints of the end user, such as what type of power supply was going to be available for use at the location where the tool was intended to be used, or such as availability of one type of motor over another at the time of design (i.e., depending on the availability or cost of a pneumatic motor instead of an electric or hydraulic motor at the time of design).

Allowable Subject Matter

11. Claims 4-5, 8-10, and 16-18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Faxing of Responses to Office Actions and Contact Information

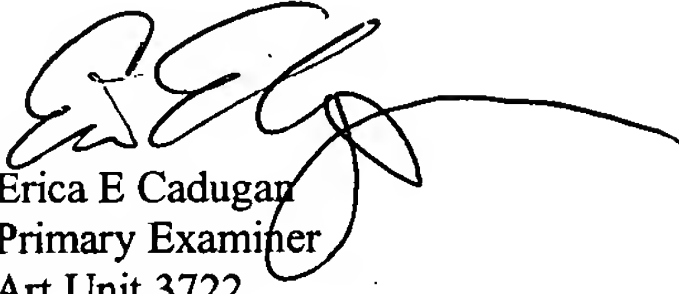
13. In order to reduce pendency and avoid potential delays, TC 3700 is encouraging FAXing of responses to Office Actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into TC 3700 will be promptly forwarded to the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica Cadugan whose telephone number is (703) 308-6395. The examiner can normally be reached on Monday through Thursday from 7:30 a.m. to 5:00 p.m., and every other Friday from 7:30 a.m. to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Wellington can be reached at (703) 308-2159. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 3700 receptionist whose telephone number is (703) 308-1148.

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Art Unit: 3722

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erica E Cadogan
Primary Examiner
Art Unit 3722

eec
October 28, 2004